

OPTICAL FIBER PREFORMS

ABSTRACT OF THE DISCLOSURE

Optical fiber preforms can comprise a glass preform structure with an inner cavity. A
5 powder can be placed within the inner cavity having an average primary particle size of less than
about one micron. The powder can be in the form of unagglomerated particles or a powder
coating with a degree of agglomeration or hard fusing ranging from none to significant amounts
as long as the primary particles are visible in a micrograph. Powders can be placed within a
preform structure by forming a slurry with a dispersion of submicron/nanoscale particles within a
10 cavity within the preform. In other embodiments, a powder coating is formed within a preform
structure by depositing the powder coating directly from a reaction product stream. The
formation of the powder coating can be formed within the reaction chamber or outside of the
reaction chamber by flowing the product particle stream through a conduit leading to the preform
structure. In additional embodiments, a powder coating is placed on an insert, e.g., a glass insert,
15 that is subsequently placed within a preform structure.